

ABSTRACT OF THE DISCLOSURE

[53] The invention relates to a time-of-flight mass spectrometer in which a fine beam of ions is injected orthogonally into a fast pulser that pulses the ions from the fine ion beam into the spectrometer's drift region for precise determination of mass. The invention consists in increasing the duty cycle of the ions through the use of a high pulser frequency, recording the data cyclically at the same frequency, and assigning slow ions that are only measured in one of the subsequent cycles to the correct initiating pulse through the form of their lines or line patterns.